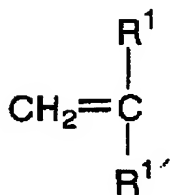


Second Edition, III-143 - III-179 (J. Brandrup & E.H. Immergut eds., John Wiley & Sons).

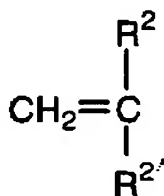
Applicants respectfully traverse this rejection.

Independent claim 1 sets forth a "toner for developing electrostatic images, comprising as a main component thereof a binder resin having a copolymer consisting of a combination of a high Tg monomer having a structure represented by the following structural formula (1) and a glass transition temperature of 50°C or higher, a low Tg monomer having a structure represented by the following structural formula (2) and a glass transition temperature of lower than 50°C, and a hydrophilic monomer having a structure represented by the following structural formula (3):

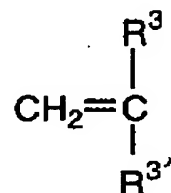
Structural  
formula (1)



Structural  
formula (2)



Structural  
formula (3)



wherein R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> independently represent a hydrogen atom, an alkyl group, an alkylester group, an alkylether group, a perfluoroalkyl group, a methoxy group, an ethoxy group, a halogen atom, a carbazole group, a pyrrolidone group, a formyl group, a cyclohexyl group, an alkyl group having a functional group, or an alkylester group having a functional group, R<sup>1'</sup> and R<sup>2'</sup> independently represent an alkyl group, an alkylester group, an alkylether group, a perfluoroalkyl group, a methoxy group, an ethoxy group, a halogen atom, a carbazole group, a pyrrolidone group, a formyl group, a cyclohexyl group, an alkyl group having a functional group, or an alkylester group having a functional group, and R<sup>3'</sup> represents a hydrophilic group." Claims 2, 4-7, 14 and 16 depend, directly or indirectly, from claim 1 and include all of the limitations of claim 1.

The Office Action takes the position that Tsubuko in combination with Lee's teachings relating to the glass transition temperatures (T<sub>g</sub>) of polymeric materials, teaches all of the features of claim 1, and various of its dependent claims, because Tsubuko teaches a toner including a binder resin including a high T<sub>g</sub> monomer of claimed structural formula (1), a low T<sub>g</sub> monomer of claimed structural formula (2) and a hydrophilic monomer of claimed structural formula (3). Applicants respectfully disagree.

Tsubuko teaches a liquid developer that includes, in a liquid paraffin, a copolymer of a high T<sub>g</sub> monomer, a low T<sub>g</sub> monomer, a hydrophilic monomer and at least one additional monomer. *See* Tsubuko, [0073]-[0076]. For example, Tsubuko teaches, as in Example 7, a 10% liquid paraffin solution of a copolymer of stearyl methacrylate, methyl methacrylate, methacrylic acid and hydroxymethyl methacrylate. *See* Tsubuko, [0169]-[0173]. However, this copolymer is not provided as a main component of a toner, but is instead a minor component of a liquid paraffin solution. *See generally* Tsubuko. Nowhere does Tsubuko disclose including copolymers such as that of Example 7 as a main component of a toner. *See generally* Tsubuko.

Tsubuko does teach that resins may be used to disperse its colorants. *See* Tsubuko, [0073]. Practically, the resins used to disperse the Tsubuko colorants are styrenic resins, phenolic resins, vinyl chloride-vinyl acetate copolymers or polyethylenes. *See* Tsubuko, [0131], [0135], [0139], [0142], [0145], [0165], [0169], [0174], [0255], [0259], [0263], [0265], [0267], [0288], [0292], [0296]. None of these resins have a copolymer of a high T<sub>g</sub> monomer, a low T<sub>g</sub> monomer, a hydrophilic monomer and at least one additional monomer, as set forth in claim 1. *See generally* Tsubuko. Thus, Tsubuko does not teach, as its colorant particles, a toner that has as a main component a binder resin having the copolymer of claim 1.

For at least the above reasons, Tsubuko, alone or in light of Lee, does not teach a "toner for developing electrostatic images, comprising as a main component thereof a binder resin having a copolymer consisting of a combination of a high Tg monomer having a structure represented by the following structural formula (1) and a glass transition temperature of 50°C or higher, a low Tg monomer having a structure represented by the following structural formula (2) and a glass transition temperature of lower than 50°C, and a hydrophilic monomer having a structure represented by the following structural formula (3)," as set forth in independent claim 1. Accordingly, Applicants respectfully submit that claim 1 and its dependent claims are patentable over the cited references. For at least these reasons, reconsideration and withdrawal of the rejection are respectfully requested.

**B. Tanaka**

The Office Action rejects claims 1-5, 13 and 16 under 35 U.S.C. §102(b) over U.S. Patent No. 4,504,563 to Tanaka et al. Applicants respectfully traverse this rejection.

Claim 1 is set forth above. Claims 2-5, 13 and 16 depend, directly or indirectly, from claim 1 and include all of the limitations thereof.

The Office Action takes the position that Tanaka teaches all of the features of claim 1, and various of its dependent claims, because Tanaka teaches a toner including a binder resin that is a methyl methacrylate/iso-butyl methacrylate/methacrylic acid copolymer. *See* Tanaka, claim 11. Applicants respectfully submit that even if Tanaka broadly discloses toners that may include binder resins having copolymers meeting the limitations of claim 1, Tanaka does not teach the claimed toners or the benefits that can be achieved by the claimed toners.

Although Tanaka discloses copolymers formed from a broad listing of monomers including high Tg monomers, low Tg monomers and hydrophilic monomers, Tanaka nowhere discloses the specific selection of a high Tg monomer, a low Tg monomer and a hydrophilic

monomer, having the specific structural formulas (1), (2) and (3), as required by claim 1. *See generally* Tanaka.

Tanaka practically discloses only toners that include styrenic components; that is, all of the toners of the Tanaka examples include styrene monomers. *See* Tanaka, col. 5, line 60 - col. 9, line 10. As discussed in the instant specification, styrene is often used as a monomer component for the binder resins of toners, because styrene is inexpensive. *See* Specification, page 12, lines 16-23. In light of styrene's low cost, one of ordinary skill would be motivated to use styrene, or a derivative thereof, as a monomer where one or more ethylenically unsaturated monomers are used. That is, one of ordinary skill would not be motivated to prepare a copolymer from the monomers disclosed in Tanaka without including a styrenic monomer as an ethylenically unsaturated monomer, particularly in light of the Tanaka examples, all of which include a styrenic monomer. *See* Tanaka, col. 5, line 60 - col. 9, line 5. However, styrene-containing toners - like those illustrated by Tanaka - often have problems, such as decreased image strength, due to styrene's brittleness. *See* Specification, page 12, line 24 - page 13, line 2.

The claimed toners, in contrast to those practically taught by Tanaka, include binder resins that exclude styrene and its derivatives. By eliminating styrene from the claimed toners, the claimed toners avoid emission of odors and volatile components associated with styrene-containing toners, have excellent low temperature fixing, and provide images that are durable, glossy and have excellent image quality. *See* Specification, page 18, line 5 - page 19, line 1.

Tanaka does not contemplate any of these issues, and one of ordinary skill in the art, based on the teachings of Tanaka would not have understood that by choosing the specific combination of monomer types set forth in claim 1, and by excluding styrenic components, a toner could be prepared that would avoid emission of odors and volatile components

associated with styrene-containing toners, have excellent low temperature fixing, and provide images that are durable, glossy and have excellent image quality.

For at least these reasons, Applicants respectfully submit that Tanaka does not disclose all of the features of the toners of claim 1. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

## **II. Claim Rejections Under 35 U.S.C. §103**

The Office Action rejects claims 11, 12, 14 and 17 under 35 U.S.C. §103(a) over Tanaka in view of Handbook of Imaging Materials, 155-164, 173-187, 209, 210, 217-220 (Arther S. Diamond & David Weiss eds., Marcel-Dekker, Inc. 2001) ("Diamond"); rejects claim 8 under 35 U.S.C. §103(a) over Tanaka in view of Diamond and further in view of U.S. Patent Publication No. 2003-0077534 to Shiraishi et al.; rejects claim 9 under 35 U.S.C. §103(a) over Tanaka in view of U.S. Patent No. 2,297,691 to Carlson; and rejects claims 9, 10 and 15 under 35 U.S.C. §103(a) over Tanaka in view of to Carlson, and further in view of U.S. Patent No. 6,214,510 to Kojima. Applicants respectfully traverse these rejections.

Claims 8-12, 14, 15 and 17 depend, directly or indirectly, from and include all of the limitations of claim 1, which is set forth above.

As discussed above, Tanaka, the primary reference, does not teach, nor does it suggest, a "toner for developing electrostatic images, comprising as a main component thereof a binder resin having a copolymer consisting of a combination of a high Tg monomer having a structure represented by the following structural formula (1) and a glass transition temperature of 50°C or higher, a low Tg monomer having a structure represented by the following structural formula (2) and a glass transition temperature of lower than 50°C, and a hydrophilic monomer having a structure represented by the following structural formula (3)," as set forth in independent claim 1, or the benefits that can be achieved by the claimed toners.

The secondary references, Diamond, Carlson and Kojima, are cited as disclosing various features of dependent claims 9-12, 14 and 15. Specifically, Diamond is cited for its disclosures relating to toner particle size (claims 11 and 12) and the inclusion of release agents in toners (claim 14). Carlson is cited for its disclosures relating to shape factor and surface index (claim 9). Kojima is cited for its disclosures relating to surface property index (claim 10), SF1 (claim 9) and colorant particle sizes (claim 15). However, none of the secondary references teach or suggest binder resins including a copolymer as set forth in claim 1. Because neither Tanaka nor the secondary references teach or suggest the claimed toners containing the specific copolymers that do not include styrenic components or the benefits that can be achieved by a toner containing such a copolymer, Applicants respectfully submit that dependent claims 9-12, 14 and 15 are patentable over Tanaka, Diamond, Carlson and Kojima, individually and in combination.

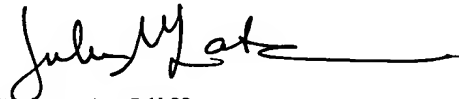
For at least these reasons, Applicants respectfully request reconsideration and withdrawal of the rejections are respectfully requested.

### **III. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-20 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Registration No. 51,156

JAO:JML/ccs

Date: March 1, 2006

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